

REMARKS

Claims 1-18, 34-37, 39-40, and 48-50 are amended, claims 19-32 and 38 are canceled, and no claims are added; as a result, claims 1-18, 33-37, and 39-51 are now pending in this application.

No new matter has been added by the amendments to claims 1-18, 34-37, 39-40, and 48-50. Support for the amendments to claims 1, 34, 35, and 50 related to driving a display is found throughout the specification, including but not necessarily limited to the specification on page 10, third paragraph, and in claim 18 as originally filed in the application.

Support for the amendments to claims 35, 36, 48, and 50 is found throughout the specification, including but not necessarily limited to the specification on page 12 in the last paragraph, through the end of the same paragraph on page 13, and in the last paragraph on page 21.

Support for the amendments to claims 2 and 35 is found throughout the specification, including but not necessarily limited to the specification on page 7 in the first complete paragraph.

Additional amendments have been made to one or more of the claims in order to comport the preamble or other portions of a given claim to the independent claims from which the given claim depends, or to amend the dependency of the claim.

It is respectfully noted that claims 18, 19, 25, 32 are cancelled, and that all independent claims, at least as now amended, include non-negative matrix factorization in relation to driving a display. Therefore, it is respectfully submitted that no restriction of the claims is necessary or proper.

Drawing Rejections/Objections

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the algorithms of claims 1-34, 35, 36, 48, and 50 must be shown in a titled: flow chart, Nassi-Shneiderman diagram, action diagram, or Warnier-Orr diagram or the feature(s) canceled from the claim(s). No new matter should be entered.

In reply, a new drawing sheet including FIG. 12 is included with this response. FIG. 12 includes a flowchart 1200. Flowchart 1200 includes elements indicated by reference numbers 1202, 1204, 1206, 1208, and 1210. It is respectfully submitted that FIG. 12, and the flowchart 1200, show the features of claims 1-34, 35, 36, 48, and 50 in compliance with the requirements of 37 CFR 1.83(a).

Further, no new subject matter has been added through new FIG. 12. Support for the flowchart as depicted in FIG. 12 is found, for example but not necessarily limited to, claim 1 as originally filed in the application.

In view of FIG. 12, it is respectfully submitted the features of claims 1-34, 35, 36, 48, and 50 are shown in the drawings, and therefore the claims are not cancelled, and remain pending in the application.

Withdrawal of the 37 CFR 1.83(a) rejection of the drawings is respectfully requested.

Claim Objections

Claims 1, 35, 48, and 49 are objected to because of the following informalities:
"factorising" should be --factorizing--.

Claims 1, 35, 48, and 49 are objected to because of the following informalities:
"factorisation" should be --factorization--.

Claims 1, 35, 36, 48, 49, and 50 have been amended in one or more places to delete one or more instances of the words "factorising," "factorisation," and "factorise" and to replace these words with "factorizing," "factorization" and "factorize" respectively. Therefore, it is respectfully submitted that these objections to the claims are overcome.

Claims 23, 27, 29, and 32 are objected to because of the following informalities:
"analysing" should be --analyzing--. Claims 23, 27, 29, and 32 are cancelled, so the objection to these claims is moot.

Withdrawal of the objections to the claims is respectfully requested.

The Rejection of Claims Under § 112

The Office Action on page 4 states:

The terms "substantially independent" in claim 2 and "substantially independently" in claim 37 are relative terms which renders the claims indefinite."

The Office Action on page 6 further states:

Therefore, claims 2 and 37 are considered to be non-statutory under 35 U.S.C. 112, second paragraph. The 35 U.S.C. 112, second paragraph is respectfully traversed.

These rejections of claims 2 and 37 are respectfully traversed. Claims 2 and 37 have been amended to remove the word "substantially" in relation to the independent determination of a row/column value, and to specify an alternative concerning such determination on the basis of weighting factor.

It is respectfully submitted that claims 2 and 37, at least as now amended, comply with the requirements of 35 U.S.C. 112, second paragraph. Reconsideration and withdrawal of the 35 U.S.C. 112, second paragraph rejection is respectfully requested.

The Rejection of Claims Under § 101

Claims 1-12 and 14-16 are rejected under 35 U.S.C. 101 because the claimed invention preempts all practical applications of the recited judicial exception (algorithm). The 35 U.S.C. 101 rejection of claims 1-12 and 14-16 is respectfully traversed.

Claim 1, as now amended, includes a method for driving a display. Thus, claim 1 is not merely an algorithm, and therefore, at least as now amended, does not fall into the judicial exception used as the basis for the 35 U.S.C. 101 rejection. Therefore, it is respectfully submitted that independent claim 1, and claims 2-12 and 14-16 that depend from independent claim 1, include statutory subject matter under 35 U.S.C. 101.

Claim 33 is rejected under 35 U.S.C. 101 because the claimed invention is not directed to a statutory class of inventive subject matter. Claims 47 and 51 are rejected under 35 U.S.C. 101 for the same reason as claim 33. The 35 U.S.C. 101 rejection of claims 33, 47, and 51 is respectfully traversed.

As noted above, the inclusion of a data carrier such as an optical or electrical signal carrier has been deleted from the specification. Therefore, it is respectfully submitted that the subject matter of claims 33, 47, and 51, as provided in the description of the present application, includes statutory subject matter under 35 U.S.C. 101.

Claim 35 is rejected under 35 U.S.C. 101 because the claimed invention preempts all practical applications of the recited judicial exception of claim 1, described as an apparatus having the means for performing the steps of the algorithm of claim 1. The 35 U.S.C. 101 rejection of claim 35 is respectfully traversed,

For reasons analogous to those stated above with respect to independent claim 1, claim 35, at least as now amended, meets the requirements for statutory subject matter under 35 U.S.C. 101.

Claim 50 is rejected under 35 U.S.C. 101 for the same reason as claim 1. The 35 U.S.C. 101 rejection of claim 50 is respectfully traversed.

For analogous reasons to those stated above, claim 50 also does not fall into this judicial exception of an algorithm, and at least as now amended, includes statutory subject matter under 35 U.S.C. 101.

Reconsideration and withdrawal of the 35 U.S.C. 101 rejections is respectfully requested.

The Rejection of Claims Under § 102

Claims 1, 12, 14-22, 25-28, 30-36, 48, and 50 are rejected under 35 U.S.C. 102 (b) as being anticipated by Lee et al. (Lee), "Learning the parts of objects by non-negative matrix factorization", 1999. Claims 19-22, 25-28, 30-32, are cancelled, so the rejection of these claims is moot. The rejection of claims 1, 12, 14-18, 33-36, 48, and 50 is respectfully traversed.

Claims 1, 12, 14-18, 33-36, 48, and 50 are not anticipated by Lee because Lee fails to disclose all of the subject matter included in any given one of claims 1, 12, 14-18, 33-36, 48, and 50. By way of illustration, independent claim 1, as now amended, recites:

A method of driving a display, comprising a method of digitally processing data in a data array defining a target matrix (X) using non-negative matrix factorization to determine a pair of matrices (F, G), a first matrix of said pair determining a set of features for representing said data, a second matrix of said pair

determining weights of said features, such that a product of said first and second matrices approximates said target matrix, the method of digitally processing data comprising:

- inputting said target matrix data (X);
- selecting a row of said one of said first and second matrices and a column of the other of said first and second matrices;
- determining a target contribution (R) of said selected row and column to said target matrix;
- determining, subject to a non-negativity constraint, updated values for said selected row and column from said target contribution; and
- repeating said selecting and determining for the other rows and columns of said first and second matrices until all said rows and columns have been updated.

Thus, independent claim 1 concerns a method for driving a display, consistent with, for example previously pending claim 18 in the application, which the Office Action has indicated includes allowable subject matter.

In contrast to the subject matter of independent claim 1, Lee relates merely to “learning parts of objects” albeit by non-negative matrix factorization. Thus, Lee is not even in the field of displays. Furthermore, there is no disclosure in Lee that hints toward driving a display using non-negative matrix factorization.

Thus, Lee is not in the same field, and fails to disclose all of the subject matter included in independent claim 1. Therefore, claim 1 is not anticipated by Lee.

Claim 36 is amended to incorporate the subject matter of claim 38 previously pending in the application, where claim 38 was indicated to include allowable subject matter, including non-negative matrix factorization. Claims 48 and 50 have also been amended as discussed above, and therefore, are allowable.

Claims 12, 14-18, and 33-35 depend from independent claim 1, and therefore are allowable for at least the reasons stated above with respect to independent claim 1.

Reconsideration and withdrawal of the 35 U.S.C. 102(b) rejection, and allowance of all claims now pending in the application is respectfully requested.

Allowable Subject Matter

Claims 14, 15, 18-32, 34, and 38-41 [were] objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The allowability of these claims is acknowledged. As noted above, it is believed that the pending claims, at least as now amended in the application, are patentable over the documents cited in the Office Action. In some instances, subject matter from one or more of these allowable claims indicated is now included in one or more of the independent claims currently pending in the application. Therefore, consideration and allowance of all claims now pending in the application is respectfully requested.

Reservation of Rights

In the interest of clarity and brevity, every assertion made in the Office Action may not have been addressed. Silence regarding any such assertion does not constitute any admission or acquiescence. All rights not exercised in connection with this response, such as the right to challenge or rebut any tacit or explicit characterization of any reference or of any of the present claims, the right to challenge or rebut any asserted factual or legal basis of any of the rejections, the right to swear behind any cited reference such as provided under 37 C.F.R. § 1.131 or otherwise, or the right to assert co-ownership of any cited reference, are reserved. It is not admitted that any of the cited references or any other references of record are relevant to the present claims, or that they constitute prior art. To the extent that any rejection or assertion is based upon the Examiner's personal knowledge, rather than any objective evidence of record as manifested by a cited prior art reference, timely objection to such reliance on Official Notice is made, and all rights to request that the Examiner provide a reference or affidavit in support of such assertion, as required by MPEP § 2144.03, are reserved. All rights to pursue any cancelled claims in a subsequent patent application claiming the benefit of priority of the present patent application, and to request rejoinder of any withdrawn claim, as required by MPEP § 821.04, are likewise reserved.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's representative at (612) 371-2132 to facilitate prosecution of this application.

If necessary, please charge any additional fees or deficiencies, or credit any overpayments to Deposit Account No. 19-0743.

Respectfully submitted,

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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 12th day of March, 2010.

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